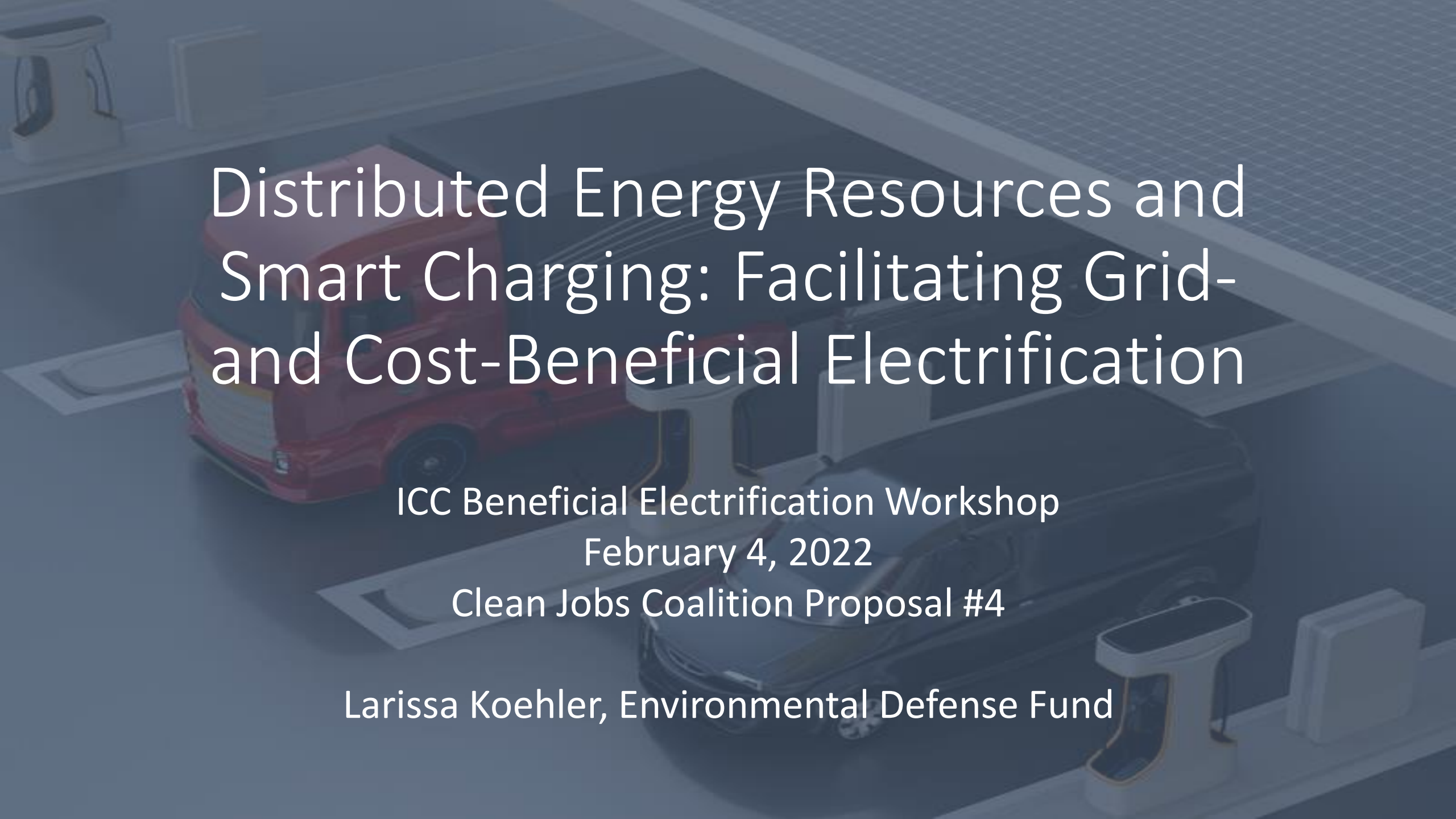


Distributed Energy Resources and Smart Charging: Facilitating Grid- and Cost-Beneficial Electrification

ICC Beneficial Electrification Workshop
February 4, 2022
Clean Jobs Coalition Proposal #4

Larissa Koehler, Environmental Defense Fund

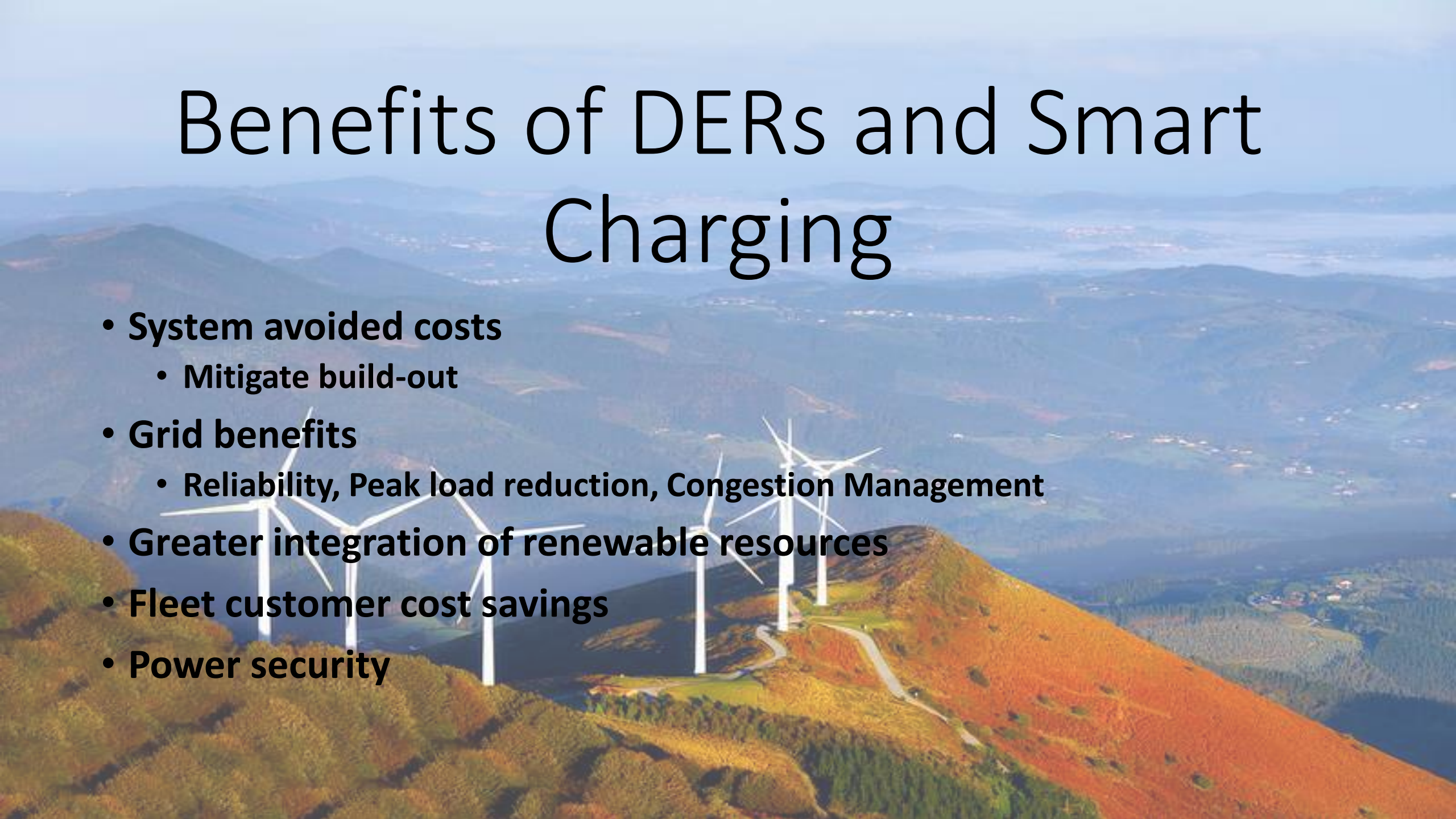
Distributed Energy Resources

- Distributed energy resources are small, modular, energy generation and storage technologies that provide electric capacity or energy where you need it
- Includes items such as on-site solar and storage
- Can dispatch energy back to the grid

Smart Charging

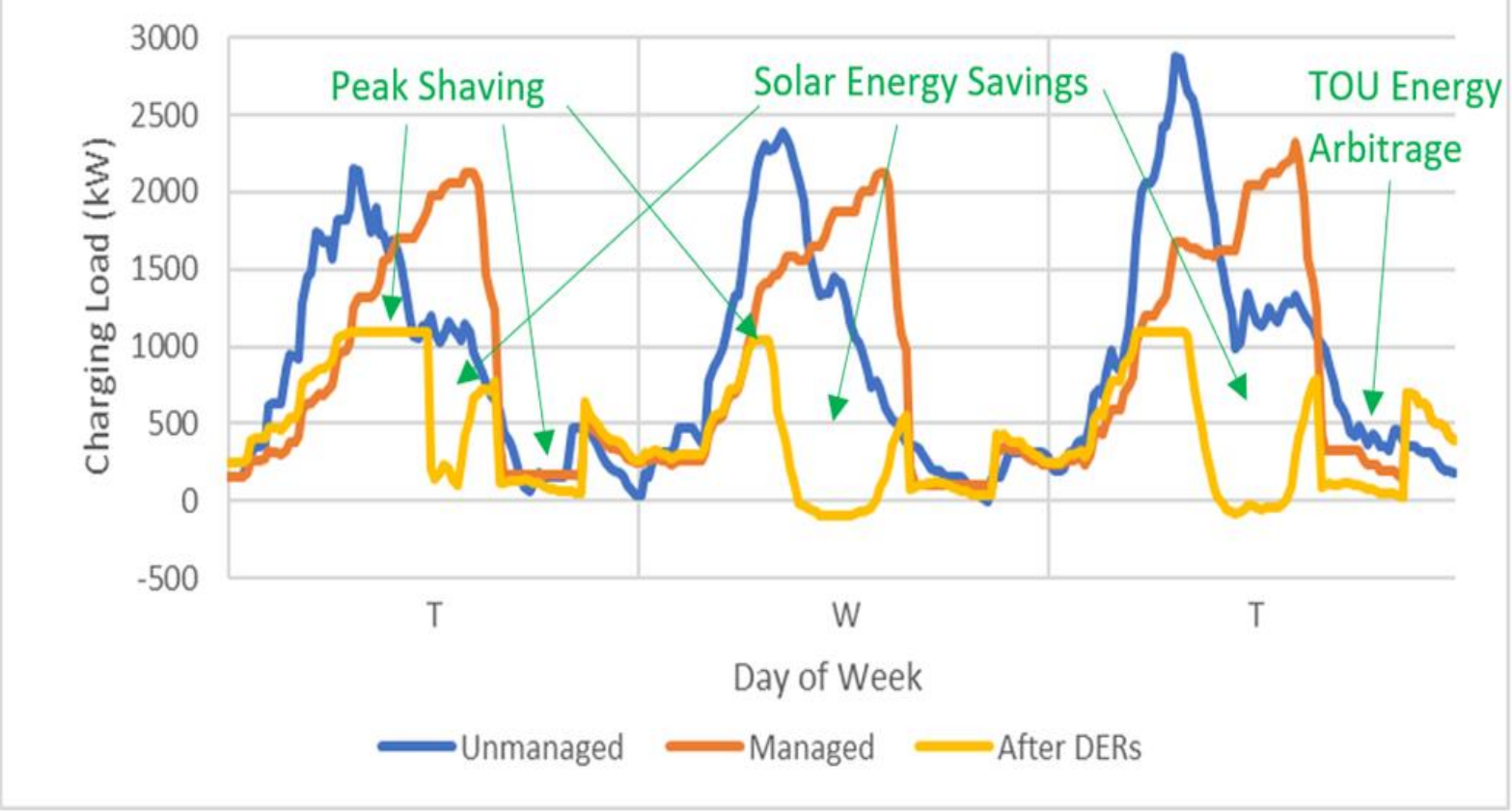
- Charging station connected to a network
- Allows communication between the vehicle, the charging station, and the network
- Networked charging comes in three “flavors” -
  - V1G – managed charging
  - V2G – bi-directional charging to the grid
  - V2B – bi-directional charging

Benefits of DERs and Smart Charging



- **System avoided costs**
  - **Mitigate build-out**
- **Grid benefits**
  - **Reliability, Peak load reduction, Congestion Management**
- **Greater integration of renewable resources**
- **Fleet customer cost savings**
- **Power security**

Example: Managed charging coupled with DERs save money by reducing and shifting demand



Scenario	Energy	Demand	Fixed	Total Bill	Total DER Savings
Current Technology DER $2/W	$42,521	$174,190	$3,061	$219,771	$433,648
Current Technology DER $5/W	$167,902	$239,441	$3,061	$410,404	$624,281
Advanced DER $2/W	$57,286	$256,206	$3,061	$316,552	$1,016,746

DER/Smart Charging Proposal

- Rebates and incentives for DERs and smart chargers
- Focused on public fleets and fleets operating in environmental justice and R3 communities
- Rebates and incentives should be a combination of Beneficial Electrification Plan funds and funds available under other CEJA programs
- Project should have demonstrable installation within 12 months of approval

medium & heavy-duty vehicle electrification

ICC Beneficial Electrification Workshop
February 4, 2022
Clean Jobs Coalition Proposal – Idea #2

Claire Cowan, Slipstream

Image credit: Transit Chicago

Financing proposal

- Finance up front cost of charging infrastructure, batteries or vehicles
- Pay back over time via on-bill charge
- Target medium- and heavy-duty vehicles in environmental justice communities
- Combine with point of purchase incentives
- Make loans transferable

On-bill financing models

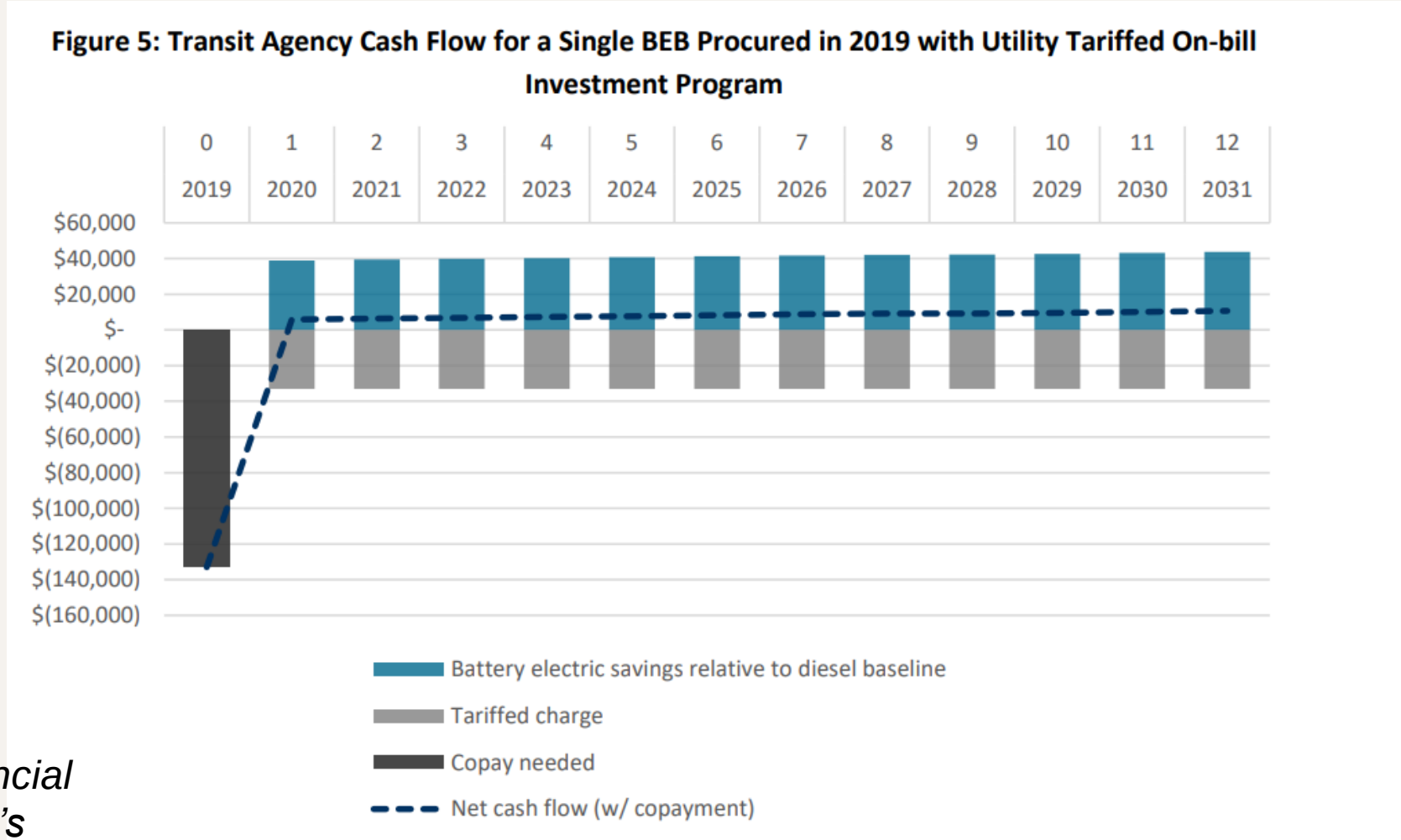
Tariffed on bill financing (TOB)	Traditional on bill financing (OBF or OBR)
Financing approval based on project economics	Financing approval based on consumer credit
Utility invests in energy upgrade on customer side of the meter	Utility invests in energy upgrade on customer side of the meter
Utility investment is paid back over time through fixed monthly utility bill charge that is less than expected energy cost savings	Loan is paid off through fixed monthly utility bill charge; no requirement that cost be less than expected savings
No credit check or consumer debt	Unsecured consumer loan
Accessible to renters	Borrower must be the building owner
Repayment terms are tied to the metered location; transferable to the next occupant	Some programs allow transfers and some do not

Advantages of tariffed on bill model

- **Focuses utility investments on cost-effective opportunities**
- **Accessible regardless of credit history**
- **Accessible to renters**
- **No consumer debt**
- **Transferable**

Image credit: The

Tariffed On Bill Financial Analysis



K. Blynn, Cadmus Group (2018). *Financial Analysis for Electrification of Lake City's Transit Bus Fleet*. Prepared for Environmental Defense Fund.

Illinois Energy Loan Program

- Serves single family, multifamily, small business
- Unsecured loan added to your utility bill
- Borrowers can finance 100% of installation cost from $500-$20,000
- 4.99% interest for 1, 3, 5, 7 or 10-year term
- No prepayment penalty
- No fees, points or closing costs
- Authorized contractor listing

Financing benefits

- **Overcome first cost barriers**
- **Scale electrification more quickly**
- **Reduce environmental impacts by targeting pollution-burdened areas**

Proximity Mapping

February 4th, 2022- ICC Beneficial Electrification Workshop

Roadmap

01

Intros & Project Description

02

Project Background

03

Program benefits, costs, & barriers

04

Conclusion

Madison Lisle, Transit Justice Organizer

Warehouse Workers for Justice

Warehouse Workers for Justice

Founded in 2007, Warehouse Workers for Justice (WWJ) is a workers' center fighting for stable, safe, and family-sustaining jobs in Illinois' warehousing and distribution industries. WWJ's Environmental Justice department works primarily in Joliet and other working-class south suburbs to demand worker and environmental justice from the powerful waterhouse industry for working families living in Will County just outside Centerpoint, the nation's largest inland port.

Project Description

Under the EV Act, 40% of make-ready investments must be located in or serving environmental justice, low-income, and eligible communities, as well as school bus and diesel public transportation vehicles located in or serving those communities. While the CEJA Equitable Eligible Communities map is a step in the right direction, additional granularity would be helpful.

Monitoring data can show where pollution is most severe - and which communities should be put first on the list for things such as charging station deployment, financing solutions, EV vehicles, and other beneficial electrification solution. We need utilities to build partnerships with organizations who utilize proximity mapping and air quality monitoring to locate and plan for their electrification implementation plans.

Project Description

- Utilities should work with community-based groups and other stakeholders who have been engaging in this work.
- Utilities should develop early on relationships particularly with groups that represent the workers and residents who are in and around ports, intermodal facilities, and warehouses, and who have done critical work to measure the health and environmental impact of MHD vehicles.

Project Description

- Engaging community expertise from those disproportionately impacted by diesel trucks associated with Transportation, Distribution, and Logistics facilities, will help to identify which geographies should be prioritized first and as quickly as possible.
- Use of maps or development of mapping tools should be done in conjunction with community-based and EJ organizations to incorporate EJ communities' priorities and to ensure those communities have access and training to use mapping and screening tools.
- This should be coordinated with broader state investment in air monitors and other health assessment and research in the EJ communities described above to address the existing skewed health and environmental data.

02

Proximity mapping Background

Centerpoint Intermodal, Elwood, IL

December 2021 Consumer Reports investigation on Amazon "Warehouses in their backyards': when Amazon expands, these communities pay the price"

- Nationally, 69% of Amazon warehouses have more people of color living within a one mile radius than the median neighborhood in their metro areas. Some of these are communities where other industrial facilities already adversely affect residents through poor air quality, excessive noise and traffic.
- The neighborhoods are poorer, too – 57% of Amazon warehouses are in communities with more low-income residents than typical for the metro area they're in.
- It's just the opposite for Whole Foods and other Amazon retail stores. These tend to be located in a city's wealthier, whiter neighborhoods, away from the communities where Amazon runs its warehouses.
- Warehouse operators are not generally accountable for air pollution from the accompanying trucks and vans. Existing air quality monitoring networks are too spread out to pick up local emissions. Additionally, a majority of warehouses are left out of regulatory processes.
- Community activists are asking local, state and federal officials to step in and regulate pollution from warehouse-related traffic and to consider an area's existing environmental hazards before allowing new warehouses to open there.

Community expertise

Environmental justice and community advocates engage in projects to identify disparate impacts of trucks as sources of air pollution through research and on the ground air monitoring studies. The utilities should harness those efforts in addition to existing tools to be able to prioritize limited investments. Utilities should build on existing outreach efforts to build new buyer-consumer relationships with small trucking fleets.

Will County as a strategic investment location

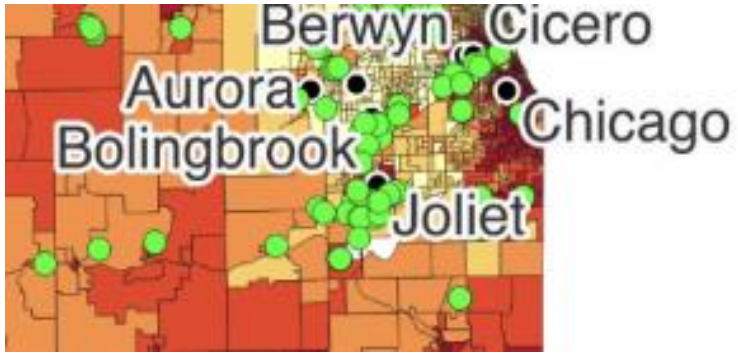
The existing data we have from Will County's health department on asthma diagnoses is limited because many Joliet residents who are undocumented or without a healthcare plan and experience asthma symptoms are not incorporated into those data sets. To support more accurate and granular mapmaking, we also need more local, comprehensive health data for our EJ communities to adequately address health disparities from air pollution.

WWJ air monitoring

Background

Using publicly available information, EDF mapped warehouses and distribution centers, which attract significant levels of diesel truck traffic. EDF layered demographic information and health data of communities within a half mile of the warehouses – including race, income, social vulnerability, and health indicators such as COPD, asthma, heart disease, and stroke. As a result, the tool can visualize the all too often disproportionate proximity of low-wealth communities and Black, Asian-American, Latino and Indigenous communities to areas where trucks gather and provide additional data support to an issue that many communities have been raising for decades.

Asthma Prevalence by Census Tract + Identified Warehouses

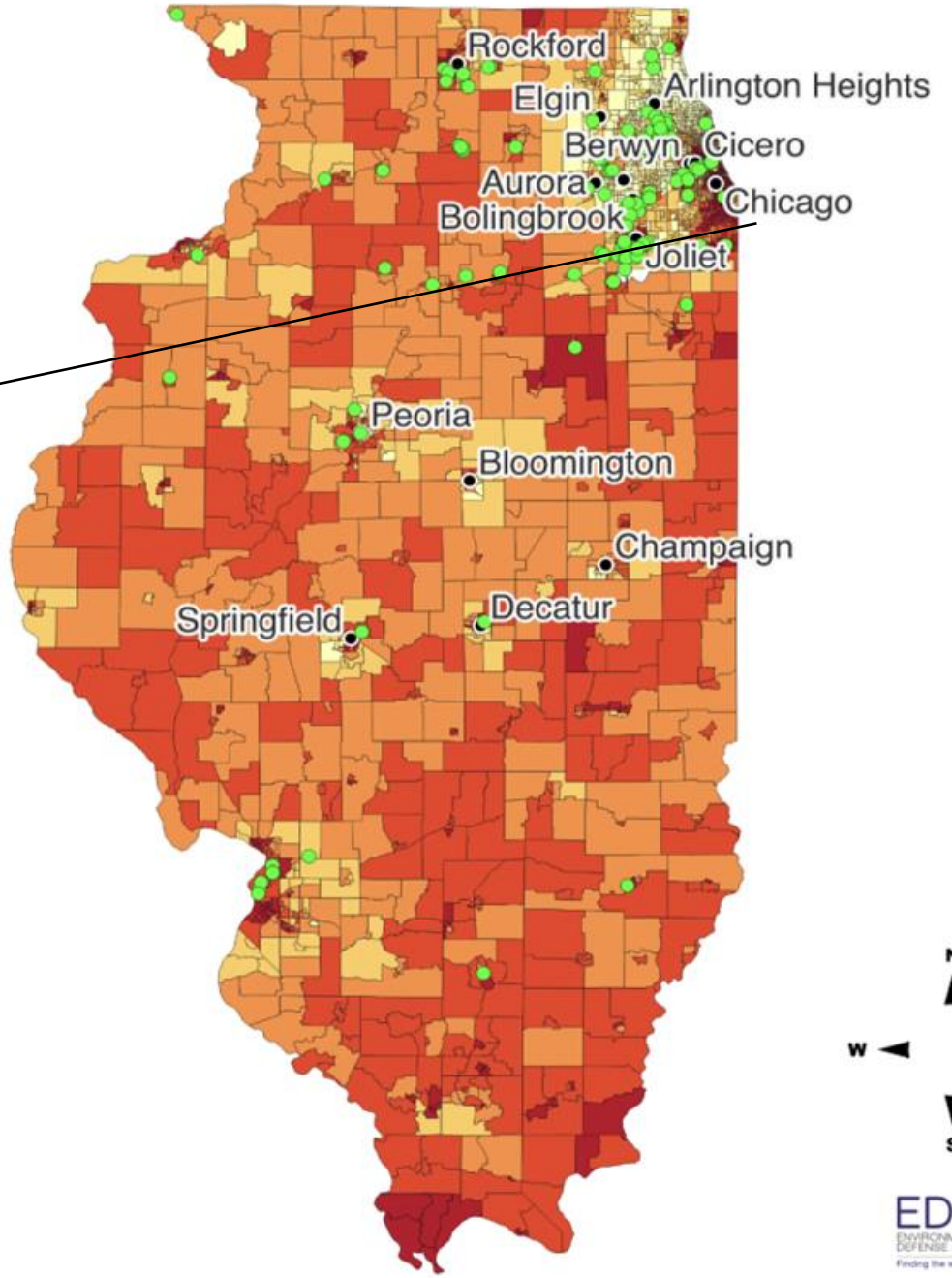


Warehouse

Asthma Percentage

- 6.6 - 8.5
- 8.5 - 9.1
- 9.1 - 9.7
- 9.7 - 10.7
- 10.7 - 17.6

0 50 100 mi

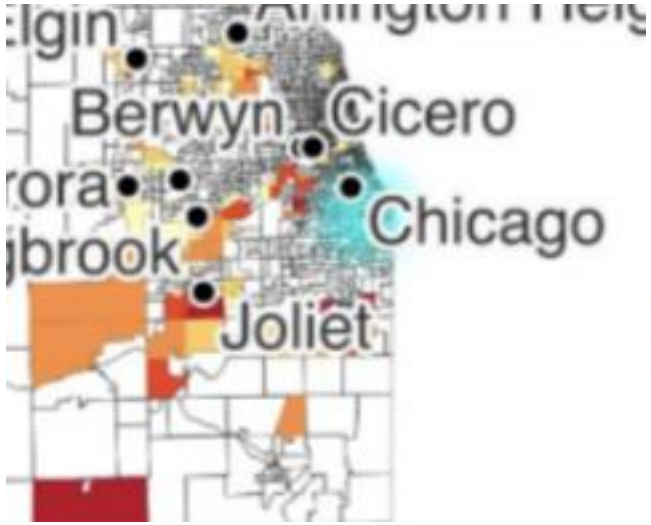


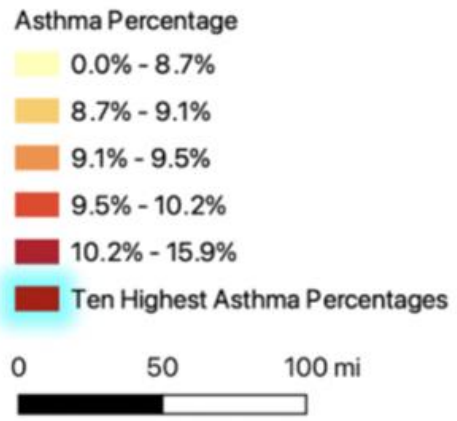
Statewide average for asthma prevalence: 9.9 %

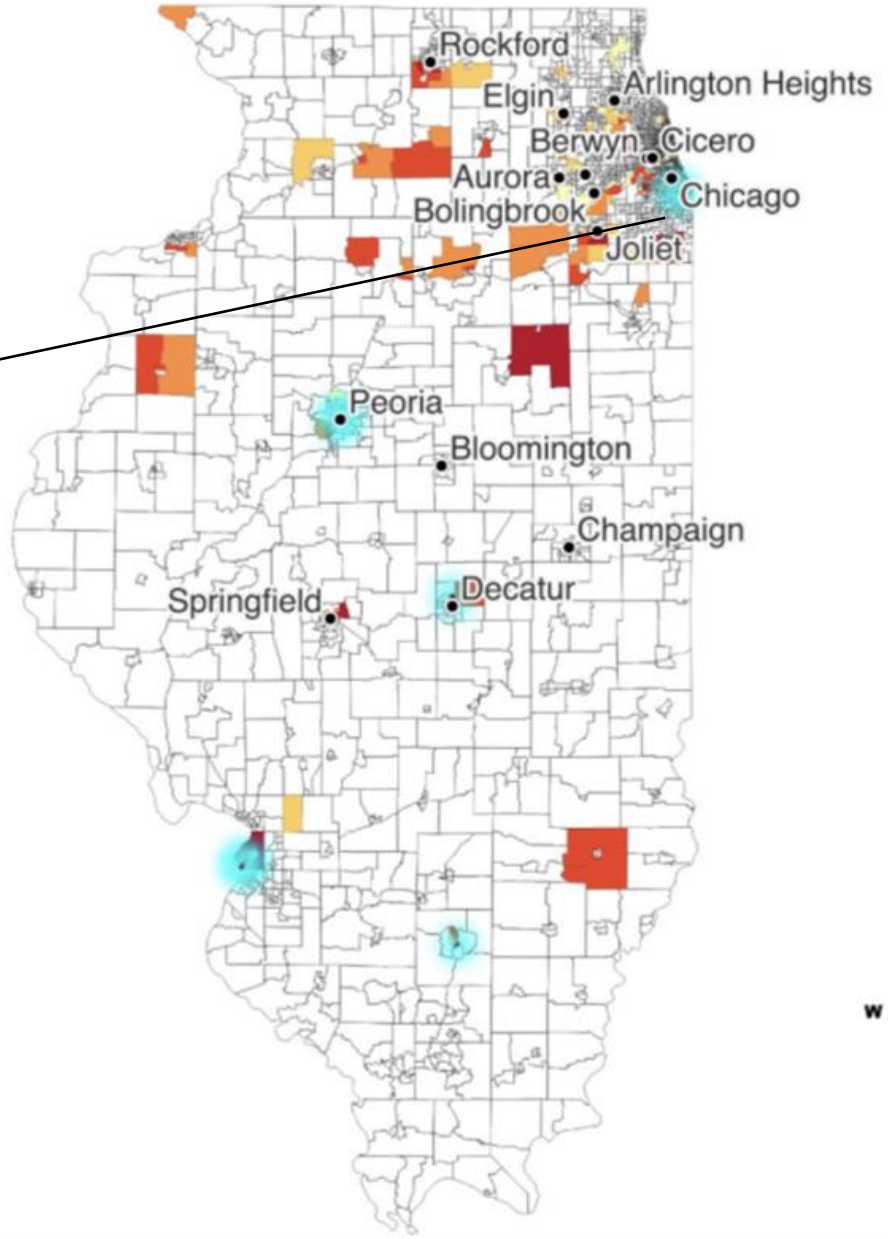
N
W E
S

EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

Asthma Prevalence for Census Tracts Within ½ Mile of Warehouses Studied



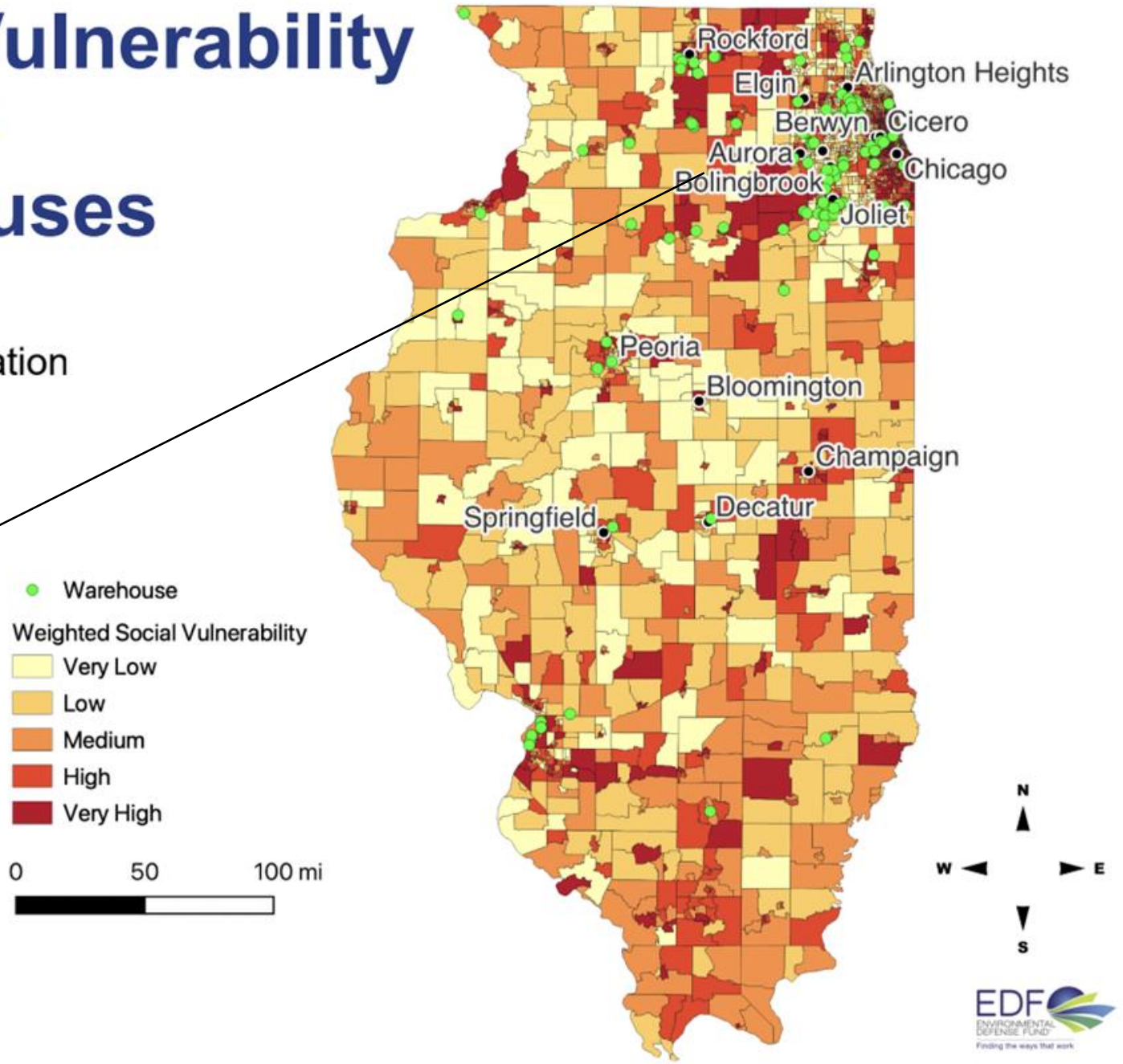




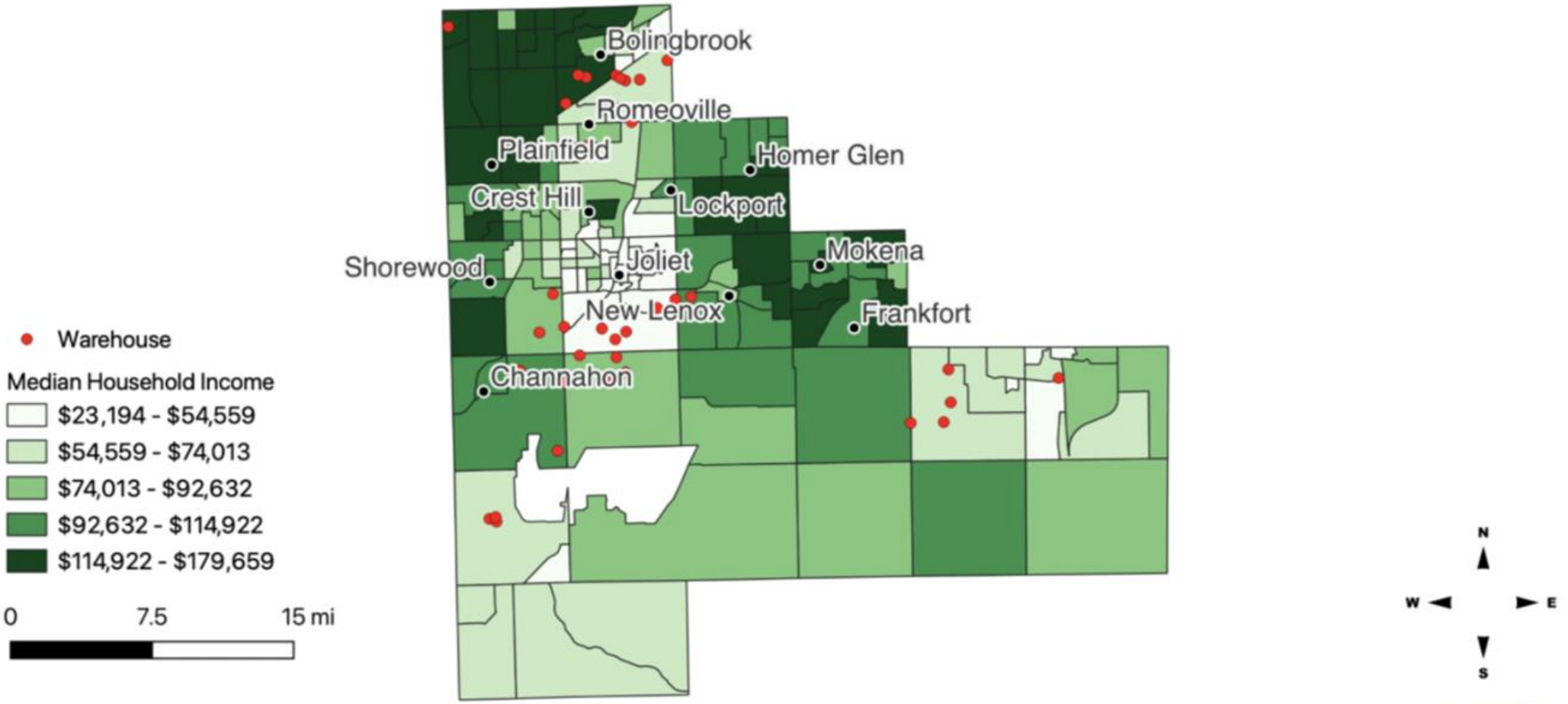
Statewide average for asthma prevalence: 9.9 %

Weighted Social Vulnerability by Census Tract + Identified Warehouses

CDC's Social Vulnerability Index (SVI) multiplied by census tract's total population



Will County: Median Household Income by Census Tract + Identified Warehouses



03
Program cost, benefits, & barriers

Cost

The costs to utilize these screening tools and analyze monitors would be recovered from all ratepayers.

Benefits

Use of these tools would ensure that communities that have been disproportionately exposed to pollution due to a variety of factors would be sufficiently prioritized by utility investments. EJ, eligible, and low-income communities that are intended to be prioritized in CEJA would be better assured that infrastructure deployment would occur equitably.

Mitigating Barriers

By coordinating with programs to provide information on vehicles and charging, this can help enhance familiarity with EV technologies in these communities, which could lead to increased interest and utilization of these vehicles.

Timing

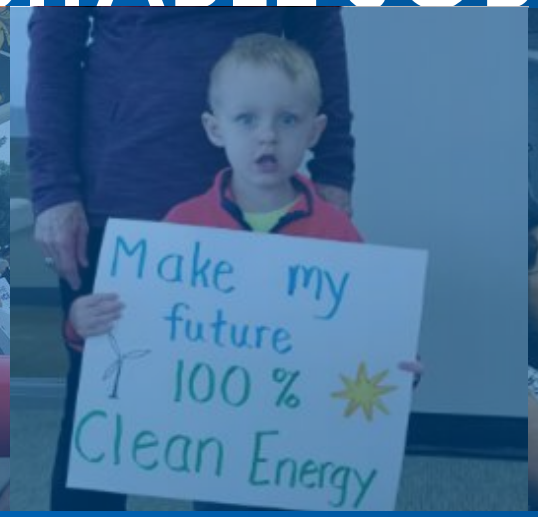
This would have to be a first step, a prerequisite to deployment of charging stations. Thus, this effort would have to be done before or in conjunction with development of beneficial electrification plans.

Thank you!

madison@warehouseworker.org

773.956.1302

THE CLIMATE AND EQUITABLE JOBS ACT



Illinois just passed the nation's most equitable and comprehensive climate action legislation. After three years of advocacy and decades of building power for people and the environment, Illinois finally put the needs of people and the planet over the demands of fossil fuel interests.

THE CLIMATE AND EQUITABLE JOBS ACT

Considering an Equitable COMPREHENSIVE APPROACH

Electric Transportation

Illinois Clean Jobs Coalition

What communities should benefit?

Illinois Clean Jobs Coalition

THE CLIMATE AND EQUITABLE JOBS ACT

DEFINING EQUITY ELIGIBLE COMMUNITIES

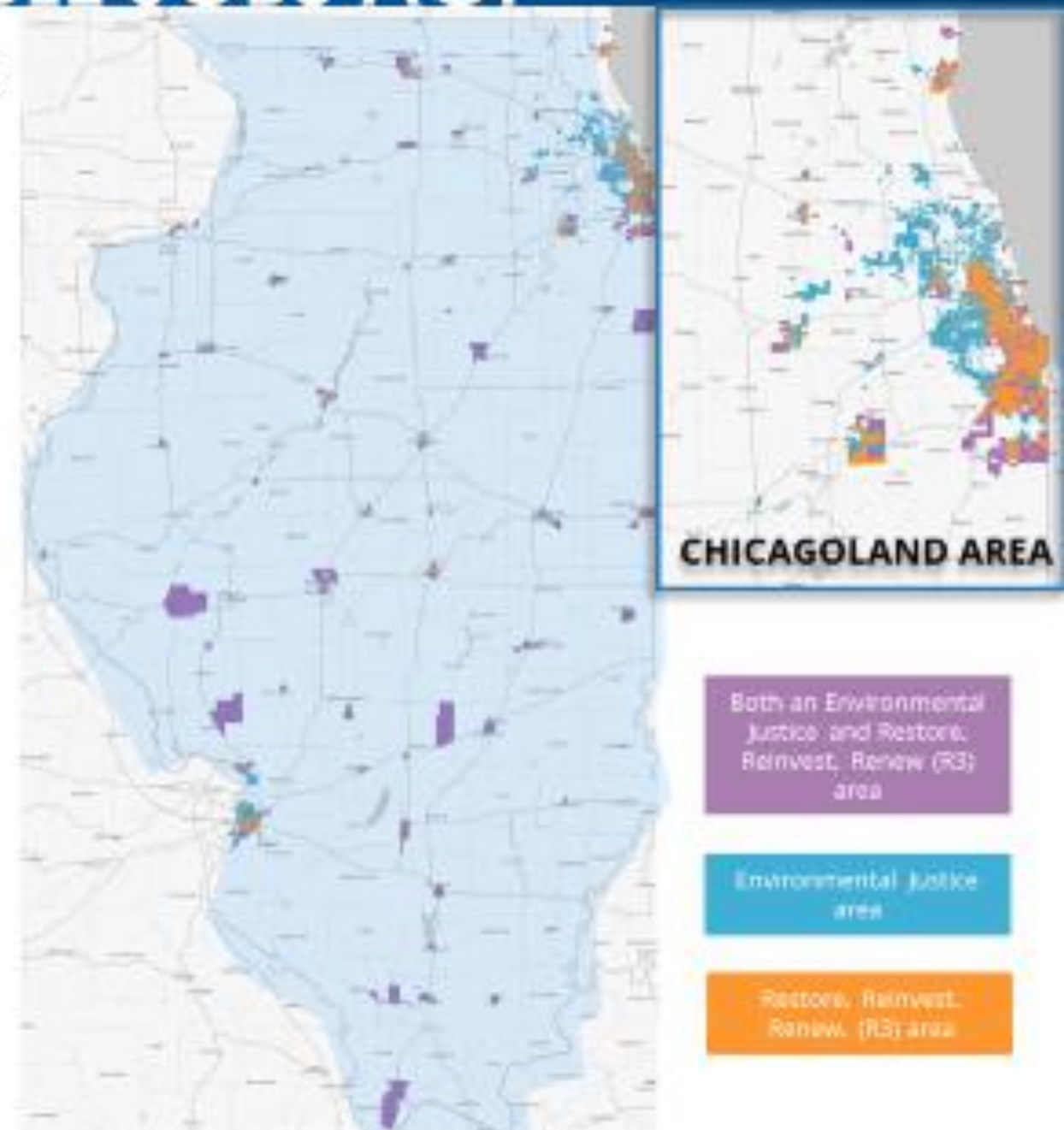
Throughout the new law, the Climate and Equitable Jobs Act Equity targets consideration and explicit benefits to newly-defined Equity Eligible Persons and Equity Eligible Communities which are, among other criteria, residents of Environmental Justice or R3 areas.

Environmental Justice Communities

Environmental Justice Communities are communities that have been identified through a calculation utilizing the U.S. EPA tool EJ Screen and a demonstrated higher risk of exposure to pollution based on environmental and socioeconomic factors.

Restore. Reinvest. Renew. (R3) Areas

R3 areas are communities that have been harmed by violence, excessive incarceration, and economic disinvestment, as originally defined for eligibility for R3 grants under Illinois' cannabis law.



The climate crisis and systemic racial injustice are inextricably intertwined. We must address both simultaneously, and the Climate and Equitable Jobs Act does exactly that.

Illinois Clean Jobs Coalition

Underinvested communities — often communities of color —are the first to suffer negative consequences of pollution but the last to reap the health and economic benefits of a clean energy future. As we move forward with our goal to replace 1 million gasoline/ diesel off the roads of Illinois we must be intentional with our placement of EV charging stations and who will benefit in the purchase of electric vehicles.

Illinois Clean Jobs Coalition

CEJA framework for targeting investments and benefits to these communities, by creating equity investment eligible communities, and equity investment eligible persons, which are, among other criteria, residents of Environmental Justice Communities created as part of the Solar for All Program or Restore. Reinvest. Renew areas established under the cannabis law.

Illinois Clean Jobs Coalition

THE CLIMATE AND EQUITABLE JOBS ACT

Questions about Policy?

Pastor Scott Onqué, Policy Director
scott@faithinplace.org
312-733-4640 x119

faith in place | action fund

www.faithinplaceaction.org

faith in place

www.faithinplace.org

Commercial Electric Vehicle Rate Design

ICC Beneficial Electrification Workshop
February 4, 2022
Clean Jobs Coalition Proposal #5

Larissa Koehler, Environmental Defense Fund

Principles of Rate Design

- Electric rates serve two distinct functions:
  - Cost recovery for utilities
  - Price signal for customers
- Effective and rapid electrification of the truck and bus sector require balancing
  - Bill manageability
  - System cost containment
- Offer rate options
  - MHDV sector made up of upwards of 85 different types all with varying operational constraints. To unlock potential multiple rates should be offered.

Time-Variant Rates

Includes time-of-use and dynamic rates

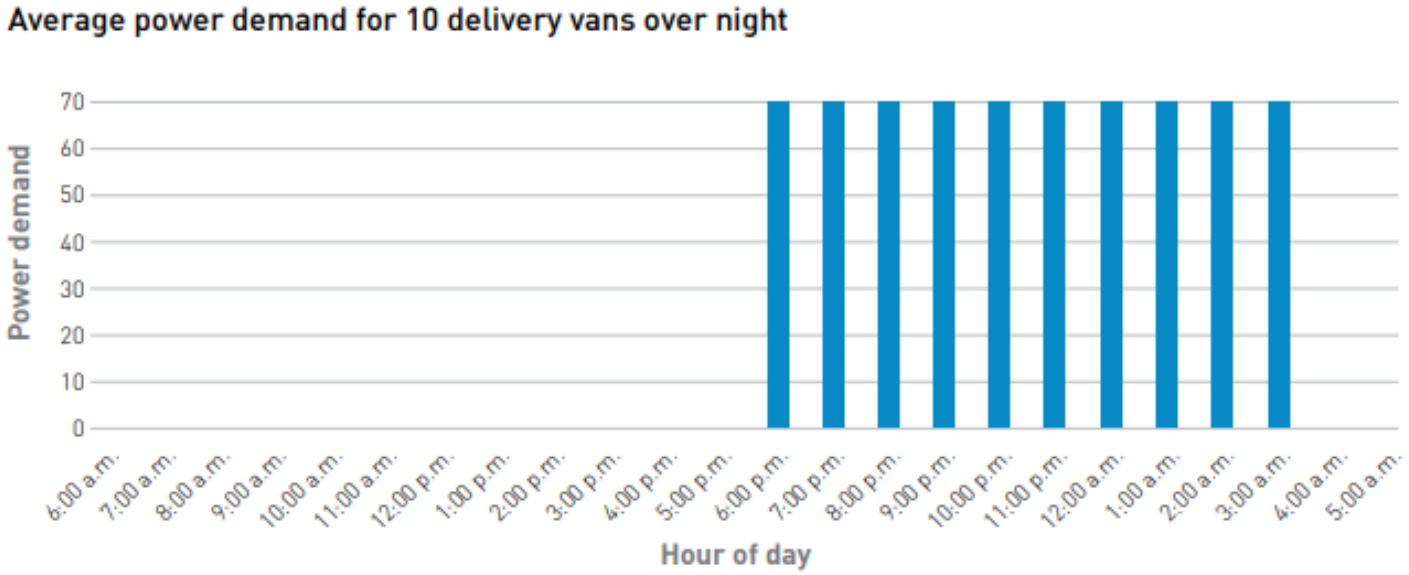
Comes with significant potential benefits

- Effective vehicle-grid integration
- Potential customer cost savings

Charging Profile: Delivery Truck

CITY DELIVERY VANS

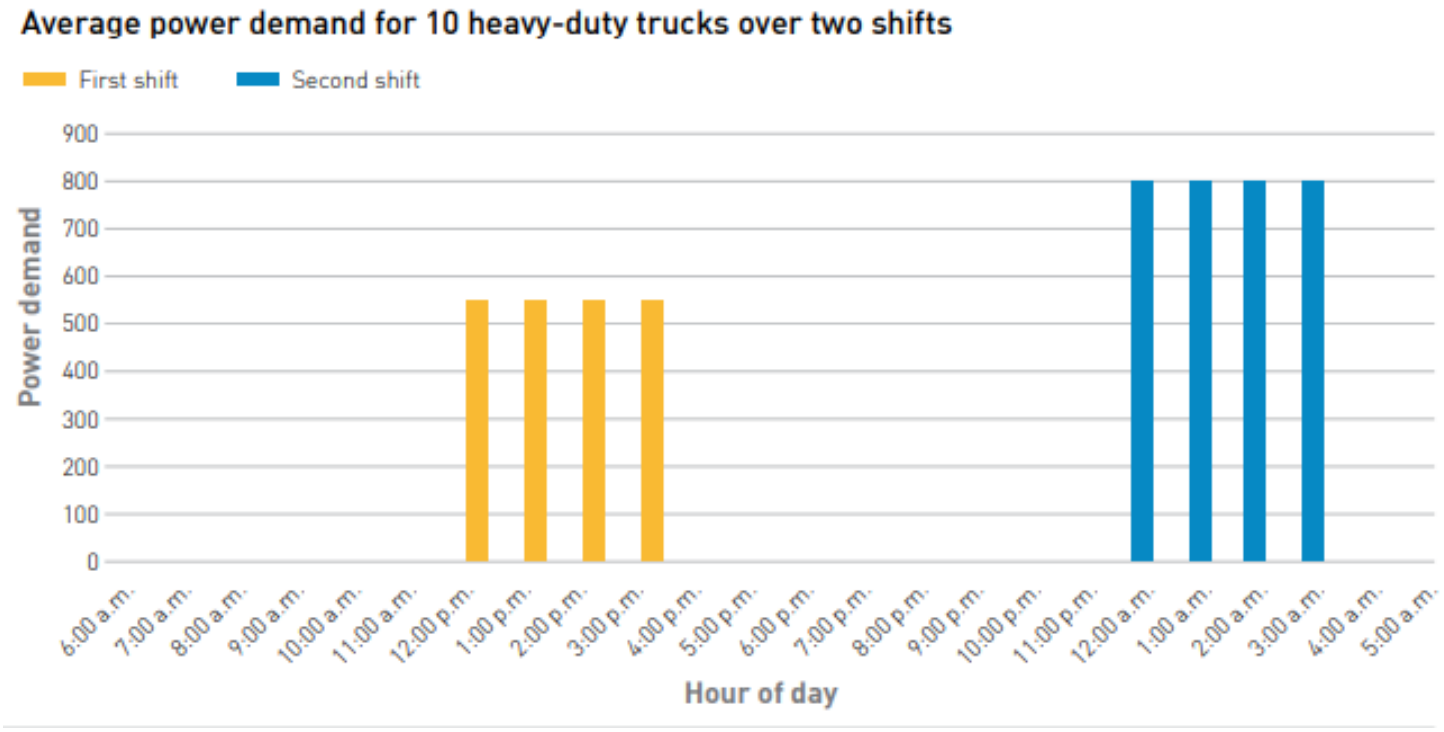
A fleet of 10 delivery vans uses 0.7 kWh of electricity per mile. All vans travel an average of 100 miles per day. They return to the fleet yard by 6 p.m. and must be ready to depart by 4 a.m.



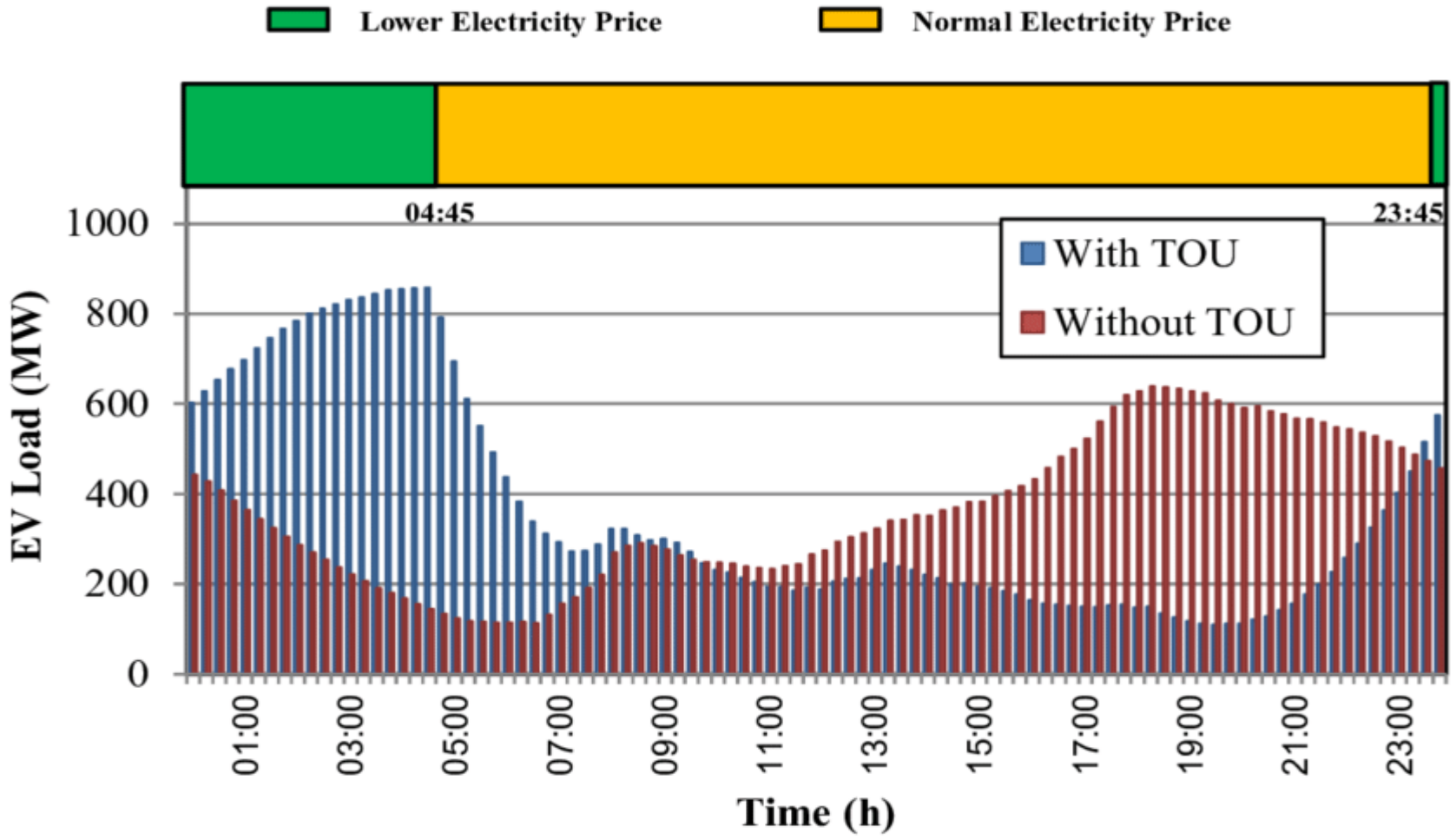
Charging Profile: Delivery Truck

LOCAL CLASS 8 TRUCKS (TWO SHIFTS)

Ten class 8 semi-tractors use 2.2 kWh of electricity per mile. All 10 trucks are used for two shifts per day and travel an average of 150 miles during the first shift and 100 miles during the second shift. The first shift returns to the fleet yard by 12 p.m. and must be ready to depart by 4 p.m. The second shift returns to the fleet yard by 12 a.m. and must be ready to depart by 4 a.m.



Load Shifting: Minimizing Cost in response to a volumetric Time of Use (TOU) Price Signal



Only works if you can shift charging time and shape

The Proposal: Commercial EV Rate

- Utilities design an optional rate for commercial EV customers
- Apply learnings from dynamic rates in other contexts
- Should be coordinated with deployment of distributed energy resources
- Need robust marketing, education, and outreach
- Should be included in 2022 plans and implemented with 12 months

Thank you!

Larissa Koehler
lkoehler@edf.org